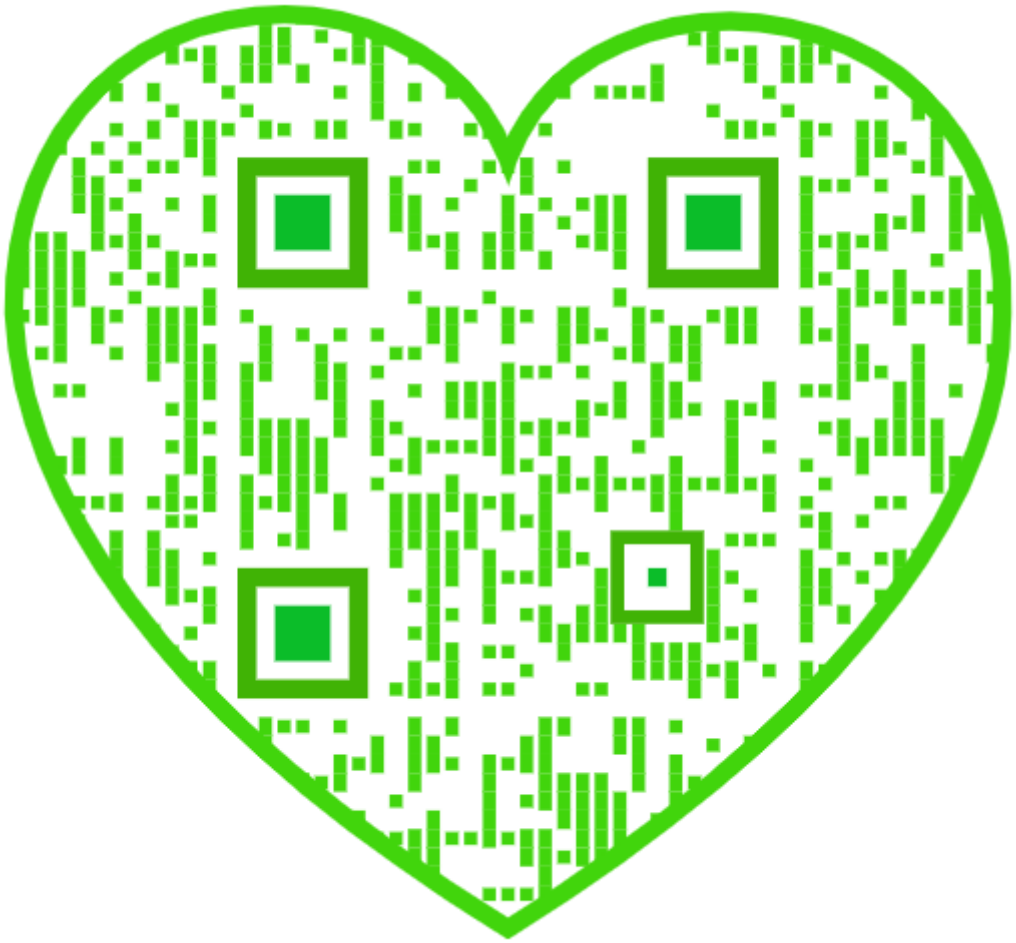
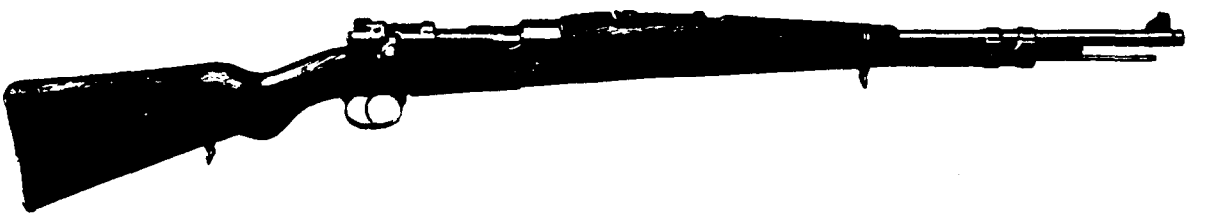
FN MAUSER
MODEL 98
RIFLE AND CARBINE
OPERATOR'S MANUAL



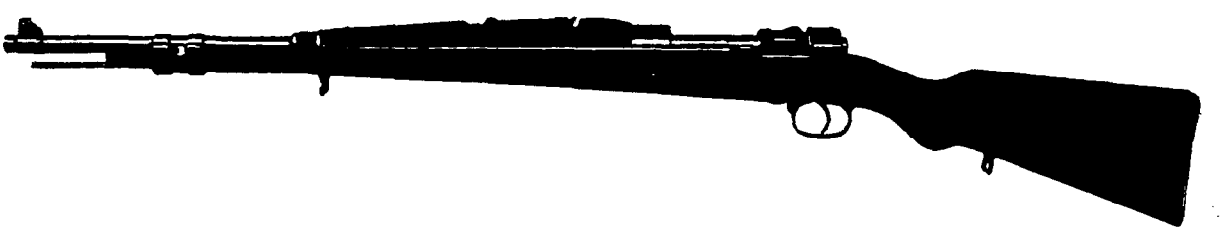
RIFLE AND CARBINE

Mauser System

Fabrique Nationale
d'Armes de Guerre
Société Anonyme
Herstal-lez-Liége
Belgique



Right side view of the F. N. rifle (Mauser System)



Left side view of the F. N. rifle (Mauser System).

Description of the F. N. Rifle

(Mauser System)

The rifle is composed of the following main parts:

1. The barrel with front-and rear sight.
2. The locking-and firing mechanism.
3. The repeating mechanism.
4. The stock with hand guard.
5. The fittings.
6. The bayonet.

1. — THE BARREL has a length of 589 m/m. (or 740 m/m.) and its reinforced rear end is screwed into the body. The rifling is righthanded and consists of four helical grooves.

The sighting apparatus consists of rear sight and front sight.

The rear sight is of the tangent cam pattern and is composed of:

the bed and cam with spring,
the graduated tangent, and
the slide with spring pawls.

The bed is tinsoldered to the barrel and has in its fore part a threaded recess in which the fixing screw of the hand guard is located. This screw engages in the barrel and rigidly connects the bed with the barrel. The sides of the bed form the cam and the hinge for the graduated tangent.

A spring located in the bed of the rear sight tends to keep the tangent on the bed. The tangent has on its upper and lower surface graduations corresponding to 200 to 2000 metres in steps of 100 metres in very legible figures, which allow easy changes of the sight in any position of the rifleman. In the upper end of the tangent is the triangular sighting notch. The 2 sides of the tangent are provided with notches in which the spring pawls are retained. By pressing these pawls, the slide can be moved in order to obtain the elevation of the required range. By releasing the pressure on the milled ends of the

pawls, the latter engage under the effect of the pawl springs in the corresponding notches of the tangent. The tangent is secured to the bed by means of 2 small lateral bearings which rest on the hinge. A pin running through the leaf and fastened to the hinge prevents losing the tangent in case the spring should break.

On the front end of the barrel is soldered the fore sight ring and block which form the support of the fore sight. The fore sight block and the ring are pierced by a screw which engages in the barrel and ensures an absolute rigidity of the whole.

The milled rear portion of the fore sight block renders the foresight prominent whilst the effect of reflection is minimized. The triangular foresight is dovetailed into the block and can be adjusted sideways.

2 — THE LOCKING- AND FIRING MECHANISM is composed of the body, the bolt and the trigger mechanism.

THE BODY (in which the barrel is screwed) receives the bolt.

The body head is formed with 2 lugs provided with ramps in front of which the locking lugs are placed when the rifle is locked. A ramp ensures the regular introduction of the cartridges in the chamber.

The lower part of the body head carries the lug which engages on the cross piece secured to the stock. This cross piece transmits the recoil to the stock ; the lug itself has a tapped recess into which is screwed the front screw of the trigger guard.

The body is cut away in its middle part in order to allow of the introduction of the cartridges in the magazine and the ejection of the fired cartridges. The left side is further cut away to facilitate the pressure of the thumb on the cartridges at the moment of loading them into the magazine. The left side of this part of the body is provided with a longitudinal groove which serves as a guide for the corresponding locking lug of the bolt. The bottom of the middle part of the body is removed to allow loading of the cartridges.

Besides the grooves of the bolt lugs, the bridge part of the body has an internal longitudinal groove which serve as a guide for the rib arranged on the cylindrical body of the bolt. This rib ensures the guiding of the bolt when its left lug faces the opening made in the side of the body to allow of the passage of the thumb when loading the rifle. On the left side of the

bridge is the opening for the bolt stop and the ejector whilst a groove provided with a ramp is arranged in the bottom of this part of the body to receive the safety lug of the bolt.

The bolt stop and the ejector are both fastened at the left side of the bridge of the body by means of the same pivot screw. The bolt stop has a catch projecting into the interior of the body. The left lug of the bolt comes into contact with the catch when the bolt is entirely drawn back. The bolt stop also serves as a support for the ejector which, passing through the groove made in the left lug, protrudes into the bolt head the instant that the bolt is completely drawn back, thus causing the cartridge case retained in the bolt head by the extractor claw, to swing to the right.

The bolt stop and the ejector are actuated by a double spring fitted to the first named part.

The front portion of the bridge of the body has a recess for the insertion of the loading clip.

The rear part is cut out in the shape of a cam against which the flat side of the bolt lever presses when opening the rifle, in order to disengage the fired shells. It has further a bearing which serves as a stop for the bolt lever at the moment of the opening of the rifle.

The tail of the body is provided with a longitudinal groove in which moves the stud of the cocking piece. The bottom of this groove has 2 holes, one for the sear nose, the other, which is tapped, is for the rear screw of the trigger guard.

THE BREECH is composed of the following parts:

The bolt.
The extractor ring.
The extractor.
The firing pin and its spring.
The cocking piece.
The bolt plug.
The safety.
The spring catch of the bolt plug.

THE BOLT. — The upper end of the cylindrical body of the bolt is cupshaped. The center of this upper end is pierced to let the point of the firing pin pass. The head or the bolt has 2

locking lugs provided with chamfered edges which facilitate the locking of the rifle; the left lug is split in order to allow of the passage of the ejector. A semi-circular groove let into the bolt head and provided with a small ramp serves as a guide for the extractor. The cylindrical body of the bolt carries the extractor locking ring with its 2 small lugs and it has 2 oblong holes arranged longitudinally which serve as escapes for the gases. Should a cartridge case break or a cap be pierced, these apertures serve as escapes for the gas towards the sides and back without danger to the rifleman.

The body of the bolt also shows in the axis of the bolt lever a longitudinal rib, which engaging in its groove on the upper portion of the bridge of the breech, guides the bolt when it is drawn rearwards.

An additional lug on the rear part of the bolt serves to increase the safety of the rifleman. At the moment of locking, this lug engages in the groove provided in the bottom of the bridge. It serves as a special locking device and additional safety in case the front lug should give way under the pressure developed by the cartridges. The device therefore protects the rifleman against any accident and increases his confidence in his rifle.

The bolt is provided with a lever terminated by a knob. The strengthened rear part of the bolt shows the cocking notch provided with a cam which forces the stud to recoil and to clear the sear nose at the moment of the closing movement. This part of the bolt is also provided with the locking recess for the safety spindle.

The inside of the bolt is bored out to receive the firing pin, its safety recesses and the main spring and is threaded at the end for connection with the bolt plug.

THE EXTRACTOR RING is provided with small lugs connecting the extractor with the bolt on which it can freely rotate.

THE EXTRACTOR is fastened to the bolt means of the extractor ring so that it can be rotated. Il has a claw at the end of the bolt which engages in the groove of the cartridge. The head of the extractor carries the extractor guide sliding in the semi-circular groove provided in the bolt head. At its rear end the extractor is terminated by a lug resting upon the bolt. The great length of the extractor gives it such a flexibility that it can

grasp a cartridge put by hand into the chamber. Its slightly curved form allows of its ac ing as a spring ensuring in this way its proper fastening upon the bolt.

THE FIRING PIN AND ITS SPRING. — The firing pin consists of the head drawn out to form the firing needle, the flange with its two chamfered safety surfaces which serve as a support for the striker spring, the cylindrical body flattened on two opposite sides for the passage of the cocking piece and the rear end with its three interrupted grooves corresponding with three bearings arranged inside the cocking piece. An incorrect connection of the firing pin and the cocking piece is impossible, as one the grooves and the corresponding bearing are broader than the 2 others.

The spring of the firing pin rests with its front part against the flange of the pin and at the other end against the front portion of the bolt plug.

THE COCKING PIECE is provided with a stud the front part of which is caught by the sear at the moment of cocking, thus retaining the cocking piece and consequently the firing pin, the cocking piece being rigidly connected with the latter part by its three interior grooves. The cocking piece has a second stud placed in the reverse direction of the first which has the purpose of preventing the introduction of foreign substances in the mechanism.

The stud is prolonged by a nose with a ramp. As the ramp of this nose is in contact with the cam of the cocking notch, the disengagement of the stud from this notch is facilitated when turning the bolt to the left in order to open the rifle. The cocking piece has further at its right a groove which allows of cocking the firing pin with the aid of a cartridge case; in case of missfire, it is therefore possible to recock the firing pin without being obliged to open the rifle.

THE BOLT PLUG is connected with the bolt by means of a saw thread. It maintains the firing pin and the cocking piece always in a correct position to each other. The strenghtened front part of the bolt plug protects the rifleman against blow backs.

In the upper part of the bolt plug is fitted the safety spindle and in the left the spring catch.

THE SAFETY DEVICE consists of the safety leaf and the safety spindle which are rigidly connected. This spindle is notched in such a way that the smooth portion, according to the position in which it is put, occupies or not the safety notch of the bolt, locking thus the bolt plug or disengaging it from the latter.

When the safety wing is pressed down to the right, the head of the safety is placed in front of the cocking piece forcing the latter back; as the sear is no more in contact with the cocking piece, it has no longer effect on the cocking piece and the depression of the sear cannot produce the discharge of the rifle. The safety head is provided with bevelled edges which facilitate the action of the safety on the cocking piece.

THE SPRING CATCH OF THE BOLT PLUG slides into the safety notch when the bolt is pulled rearward, thus connecting the bolt plug rigidly tot the bolt. When the bolt is pushed forward, the safety catch comes into contact with he rear part of the body, thus forcing the catch to return to its recess in the bolt plug and, consequently, to disengage from the safety notch; the bolt is thus set free and can turn to lock the rifle.

THE TRIGGER MECHANISM consists of the trigger bar with sear, the trigger and the spring. The trigger mechanism is fastened beneath the body by means of the trigger bar pin.

The trigger bar comprises the recess for the trigger spring and its rear portion forms the sear nose.

The trigger spring rests one end against the bottom of the body and the other end on the trigger bar.

The trigger is secured to the trigger bar by means of a riveted pin.

The upper part of the trigger forms 2 cams ; under the effect of the trigger spring, the front cam is always in contact with the bottom of the body, the other one only touches it when the trigger is pulled.

3. — THE REPEATING MECHANISM is composed of the magazine, the cover plate of same, the magazine spring and the magazine platform. The front end of the cover plate of the magazine rests in a groove arranged in the magazine and serves as a recess for the magazine spring, whilst its rear part is held by a spring bolt located in the rear stud.

The magazine spring connects the cover plate of the magazine with the platform to which it is secured by 2 bearings.

The platform is shaped to ensure the correct feeding of the cartridge at the moment of entering into the chamber and facilitates this movement.

The magazine can hold 5 cartridges placed in zigzag fashion.

The sides of the magazine are formed by the trigger guard which further consists of the finger guard, the recesses of the locking screws of the finger guard and their check screws.

4. — THE STOCK WITH HANDGUARD. — The stock is of walnut made in one piece and provided with a pistol hand grip.

The stock has at its foremost part the bayonet attachment and is provided with the spring seat of the upper band, the seat of the lower band, of the cleaning rod stop and of the cross piece.

At the lower part of the stock is secured the base of the bottom swivel and its swivel.

The rearmost portion of the stock is covered with a butt plate secured by means of 2 screws.

A boring let into the inside of the stock serves as a recess for the cleaning rod.

The different borings made in the stock serve respectively as a seating for the barrel, the lower part of the breech, the trigger guard which forms the magazine, the firing mechanism and the rear screw of the trigger guard. (This seat is fitted with a metallic casing).

The upper part of the barrel is covered by a hand guard hollowed out at its lower part to give access to the base of the rear sight.

The hand guard is provided with a spring secured by means of 2 screws; this spring, together with the screw of the rear sight base fixes the hand guard to the barrel.

The hand guard is secured to the stock by means of the lower band.

The hand guard does not only protect the rifleman against the heating of the barrel, but also improves the precision of the rifle by securing the barrel firmly to the stock.

5. — THE FITTINGS consist of the cleaning rod. It screws into a nut let into the stock. The other end is provided with a slot for the rag and is tapped so as to allow of 2 rods being screwed together for the cleaning of the barrel;

the upper band and its spring;

the bayonet attachment;

the lower band and its spring;

the swivel of the lower band;

the front-and rear screws of the trigger guard and the check screws;

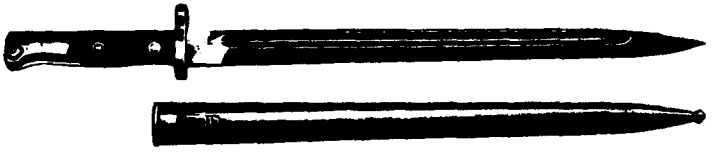
the cross piece in the breech (secured by means of a nut);

the bottom swivel;

the muzzle cover;

the sling.

6. — THE BAYONET consists of the grip, the guard with ring which surrounds the end of the barrel when the bayonet is fitted to the rifle, the blade and the steel scabbard.



The bayonet is secured to the rifle by means of the bayonet attachment. This is provided with a notch in which the spring pawl, lodged in the grip of the bayonet, engages, thus connecting the bayonet rigidly to the rifle.

Dismantling and Reassembling

DISMOUNTING.

1° Unscrew and remove the cleaning rod.
2° Remove the sling.
3° Remove the bolt and dismantle same.

Cock firing pin and raise the safety wing in the intermediate position between the safety position and the firing position.

Remove the bolt from the breech by pressing aside the bolt stop with the left thumb. The hand grips the bolt and the thumb presses back the spring catch of the bolt plug in order to disengage it from the safety notch, the right hand unscrews the bolt plug with firing mechanism from the bolt.

The left hand places the firing pin point on a wooden support or such like. The left thumb presses the safety wing down, compressing the firing pin spring until the stud of the cocking piece rises out of the slot in the bolt plug. The right hand gives the cocking piece a quarter of a turn to the right or to the left in order to disengage it from the grooves in the rear end of the firing pin. The bolt plug is then removed and the firing pin and main spring are separated.

To remove the safety device from the bolt plug. — Turn the safety wing to the right. By doing so, the stop of the safety is placed in front of the hollow made in the collar shaped lug arranged on the upper rear part of the bolt plug, and pull the safety out.

To remove the spring catch. — Press on the spring catch of the bolt plug and turn it in such a way that the stop pin gets into the notch made in the side of the bolt plug. Disengage the pin from this notch. Pull out the catch and its spring.

To take out the extractor. — Take hold of the knob with the left hand, turn the extractor to the right until the guide rises out of the semi-circular groove in the bolt head in which it glides. The removal of the guide from the groove is facilitated by a ramp provided at the end of the groove.

Dismantling the firing mechanism

Push the extractor forward. The extractor is separated from the bolt when the 2 small lugs of the rotable ring disengage from their seats beneath the extractor.

4° To remove the magazine cover plate, spring and platform. — No special tool is required. The magazine cover plate

can be easily removed by pressing the point of a cartridge in the catch which is just in front of the trigger guard and pushing it towards the trigger guard.

Draw out the magazine cover plate, the magazine spring and platform. Separate the different parts by removing the spring leaves from their bearings in the platform and in the magazine cover plate.

5° **To remove the upper and the lower band.** — Press upon the springs of the upper and lower band in order to disengage these these parts from the stops and remove them.

6 **To separate the barrel and the body, the hand guard, the trigger mechanism and the trigger guard from the stock.** — To do this the screws of the trigger guard are to be loosened whilst taking care to turn first the check screws in such a position that their notches face the screws of the trigger guard.

Raise the front part of the barrel and remove the abovementioned parts.

7° **To separate the hand guard from the barrel.** — Remove the screw of the rear sigt bed, lift the sight tangent, the slide being placed at the figure « 2 ». The wooden guard is lifted in front until the spring of this guard is disengaged from the barrel. Give the hand guard a half turn to disengage it from the sight tangent.

Further dismantling is only required under special circumstances and can easily be effected by any military armourer who should proceed as follows:

8° **To remove the bolt stop, the ejector, the sight tangent and the trigger mechanism.** — To strip the bolt stop and the ejector it suffices to loosen the fixing screw of the bolt stop.

To remove the sight tangent, drive out its pin and press on the tangent to disengage the 2 small bearings from their seats, remove the sight tangent, the spring and the slide.

To strip the trigger mechanism, drive out the axis pin of the trigger bar in order to set free the trigger bar, the trigger and the trigger spring, the trigger pin, being riveted, must not be removed.

Unscrew the nut of the cross piece and take out the latter.

Remove the pin of the cover plate catch, thus setting free the latter part and its spring.

REASSEMBLING.

1° To reassemble the bolt stop, the ejector, the sight tangent and the trigger mechanism. — If necessary, replace the magazine catch and its spring by means of the pin, making sure that it is inserted in front of the spring base.

Replace the bolt stop, the ejector, the trigger mechanism and the cross piece.

To reassemble the sight tangent to which the slide has previously been fitted, press on the sight tangent to overcome the resistance of the sight spring and to force the 2 studs of the sight tangent to get into place under the corresponding bearings of the foremost part of the sight bed; replace the locking pin of the sight leaf.

2° To fit the hand guard to the barrel. — Replace the hand guard on the barrel in such a way that the sight bed fits in the opening made for it in the hand guard and that the spring of the latter grips the barrel.

Insert the screw of the sight bed.

3° To reassemble the barrel and the body, the trigger mechanism and the stock. — Mount the barrel with hand guard on the stock so that the trigger mechanism and the stop of the trigger guard enter into their recesses.

Replace the trigger guard.

Insert the screws of the trigger guard and the check screws.

4° To replace the upper and the lower band. — Place the lower band in such a way that it is again retained by its spring.

Mount the upper band, making sure that it enters into the recess.

5° To replace the magazine cover plate, the spring and the platform. — The magazine cover plate with feeding apparatus is inserted into the box in the following manner : The magazine cover plate is, after the platform and spring have been inserted, pushed on with the flat hand when the catch snaps into the hole at the magazine cover plate, securing the latter in its correct position.

6° Reassemble the bolt and fit it to the rifle

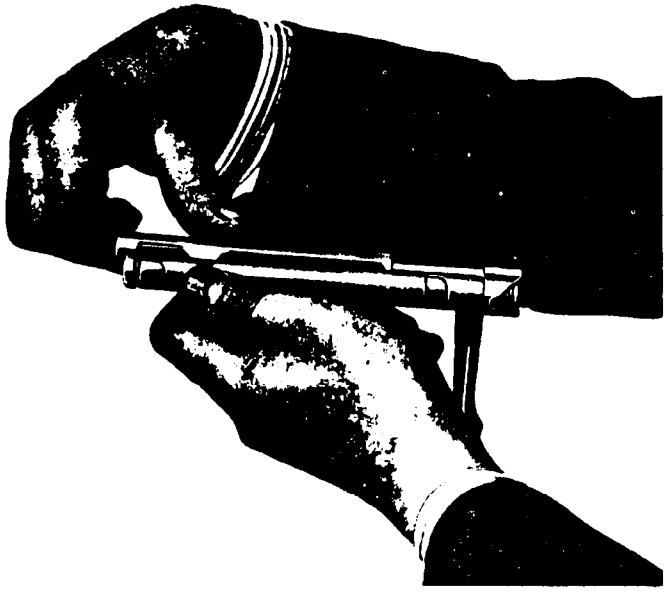
To replace the bolt plug with safety device. — Replace the catch of the bolt plug with its spring and fit the safety to the bolt plug.

Assembling the bolt. — Slip the main spring on the firing pin. Place the bolt plug on the firing pin; to do this, introduce the rear end of the firing pin in the hole of the bolt plug which serves for the reception of the flattened portion of the firing pin which, by this means, is prevented from turning.

The left hand places the firing pin vertical with its point on a wooden support and keeps the safety wing on the safety up. Press the safety wing with the left thumb until the interrupted ribs on the firing pin are free. The right hand slips the cocking pièce on the firing pin and gives it a quarter of a turn until the grooves are engaged with the ribs on the firing pin. Then the bolt is allowed to slide upward until the stud of the cocking piece enters the groove of the bolt plug.

The right hand screws the bolt plug into the bolt until the spring catch slips into the notch of the bolt plug.

Assembling the extractor. — The extractor is put in by placing the small lugs of the rotating extractor ring between the gas escape openings on the bolt, after which the extractor is put back on the lugs, and simultaneously the claw is lifted and the springy part compressed and pushed on the lugs. By a turn to the left the head of the extractor hook springs into the groove.



Assembling the extractor

When the bolt is being inserted in the body, care must be taken that the extractor stands in the correct position over the right hand lug and the wing of the safety bolt to the left.

7° Replace the sling.

8° Put in and screw the cleaning rod into place.

Manipulation and working

Opening the Breech. — Grip the rifle with the left hand between the rear sight and bolt and let het hand remain there during all loading movements. The right hand grips the bolt lever, turns it upward an eight of a turn and then pulls it back until it stops against the bolt stop. While the bolt is being turned, the ramp nose of the cocking piece stud is led along the corresponding cam surface of the bolt, whereby the former is pushed back over the trigger sear and the mechanism is cocked. The ramp nose of the cocking piece stud is placed behind the rear part of the bolt. The bolt plug cannot take part in the turning movement of the bolt, its lower part resting on the 2 sides of the tail of the body.

When the bolt lever is turned in the vertical position, it is stopped in its rotating movement by the bridge and the locking lugs are placed in front of the longitudinal grooves of the breech.

Pulling the bolt rearwards.

When pulling the bolt, the claw of the extractor withdraws the case of the fired cartridge. The ejector slides on the bolt and slips then in the groove of the left locking lug just before the lug gets into contact with the bolt stop, the ejector protrudes in the bolt head and presses on the left side of the cartridge case which is ejected to the right.

Loading the Magazine with cartridges.

With the right hand, a clip filled with 5 cartridges is placed in the vertical groove cut out for this purpose in the bridge. The cartridges are forced out of the clip being pressed downward by the thumb (the other fingers rest on the magazine cover plate until the last cartridge is pressed into the magazine.

By entering the magazine, the cartridges are placed in zigzag fashion and press on the magazine spring. The top cartridge is

held by the lip of the breech and its base is placed in front of the face of the bolt.

The clip is left in the vertical groove of the bridge.

Closing the breech.

The right hand again grips the bolt lever, the finger nails being turned to the left ; the bolt is pushed fully home and the lever turned to the right. As the bolt moves forward, it encounters the lower end of the clip and throws it out. The lower part of the bolt head meets the rim of the first cartridge and pushes the latter forward, being guided in its movement by the lip of the breech and the following cartridge (or by the magazine platform when it is the last cartridge) The cartridge slides up the ramp in the fore part of the body and is carried into the chamber. The instant the cartridge leaves the magazine, the claw of the extractor engages with the groove of the cartridge. When the bolt is pushed fully home, the spring catch of the bolt plug is stopped by the rear face of the bolt plug. The cocking piece is retained at the rear by its stud which is placed behind the sear nose.

When turning the bolt lever to the right, the locking lugs of the bolt aided by their small chamfered edges clear the ramps of the body head lugs and are placed vertically behind the corresponding lugs whilst the flat side of the lever slides along the corresponding cam face of the bridge. The bolt is pushed forward by the chamfered edges of the locking lugs whilst the cocking piece, and consequently the firing pin which are rigidly connected, are retained at the rear. The spring of the firing pin and with its rear end on the front portion of the bolt plug is still more compressed by the forward movement of the bolt plug, whlist the firing pin is retained at the rear by means of the cocking piece. The closing of the breech is complete when the bolt lever is turned down.

To put at safe.

Turn the safety to the right, The non notched portion of the safety spindle enters the slot of the bolt end and the bolt cannot be turned. At the same time, the slanting surface of the safety head forces the cocking piece back, thus withdrawing the latter from contact with the sear. The sear has therefore no more effect on the cocking piece.

Disengaging the safety.

Turn the safety to the left. When the non notched portion of the spindle is withdrawn from the safety slot in the bolt, the bolt is no longer locked ; the cocking piece advances until the stud engages with the sear.

Firing.

Under the effect of the spring of the trigger bar, the sear nose projects into the groove of the tail of the body, the trigger rests on its front cam underneath the body and is connected to the trigger bar by its pin.

Press the tail of the trigger backwards. The trigger revolves first on its pin and as its front cam rests against the bottom of the breech, the sear nose is depressed and sets the cocking piece free, which under the effect of the spring of the firing pin and the ramp nose of the cocking piece enters the notch of the bolt. The point of the firing pin juts out in the head of the bolt and strikes the cap of the cartridge.

The percussion can only take place when the bolt is completely closed; if this is not the case, the safety chamfers of the flange of the firing pin and those of its recesses in the bolt are not in line and the firing pin cannot protrude through the bolt head. In this case, the nose of the cocking piece presses under the action of the firing pin spring on the cocking cam of the bolt and will make the closing complete.

To continue the firing.

After the first shot has been fired, open and close the bolt, fire and repeat the movement until the last cartridgde is fired.

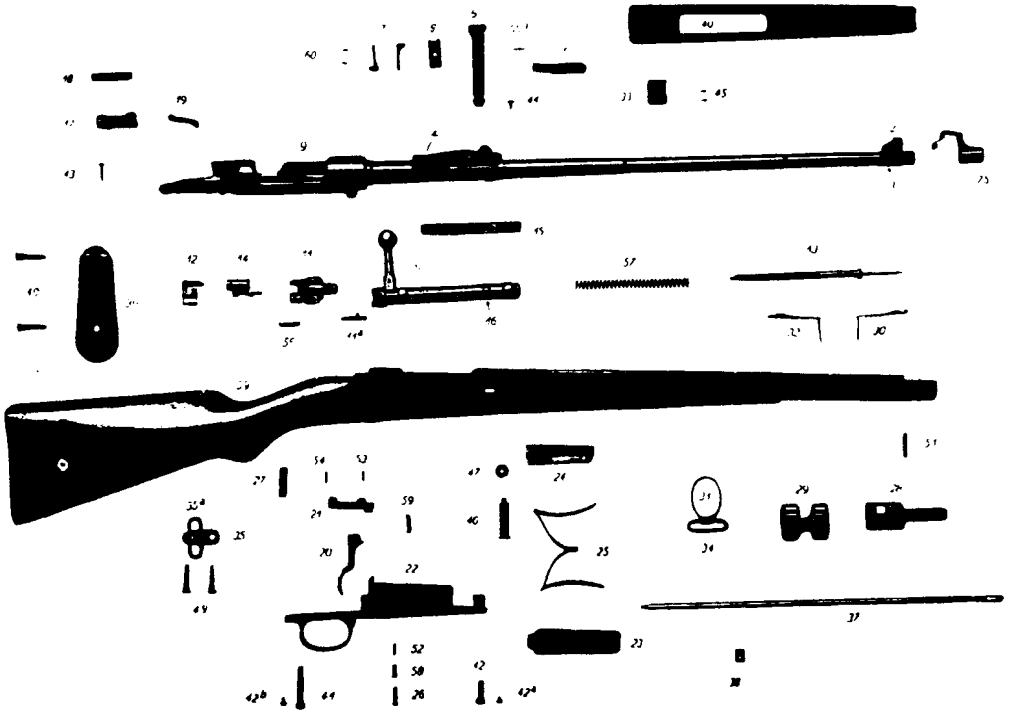
To empty the magazine.

Open and close the bolt as many times as is necessary: a cartridge is ejected at every moment.

To place the cartridge on the clip.

Engage the groove of the cartridge case in the lips of the clip; the cartridges are retained on the clip by means of the clip spring.

F. N. Rifle with its muzzle cover (Mauser System).



Component parts of the F. N. Rifle (Mauser System).

List of component parts of the F. N. Rifle (Mauser System)

1. Barrel.
2. Front sight.
3. Front sight ring.
4. Rear sight bed ring.
5. Rear sight spring.
6. Rear sight tangent.
7. Spring pawl (2 p.)
8. Sight slide.
9. Body.
10. Bolt.
11. Bolt plug.
11a. Spring catch.
12. Safety wing.
13. Firing pin.
14. Cocking piece.
15. Extractor.
16. Extractor ring.
17. Bolt stop.
18. Bolt stop ring.
19. Ejector.
20. Trigger.
21. Trigger bar.
22. Trigger guard.
23. Magazine cover plate.
24. Magazine platform.
25. Magazine spring.
27. Trigger guard cross piece.
26. Magazine cover plate catch.
28. Bayonet attachment.
29. Upper band.
30. Upper band spring.
31. Lower band.
32. Lower band spring.
33. Hand guard spring.
34. Lower band swivel.
35. Bottom swivel base.
35a. Bottom swivel (same as 34).
36. Butt plate.
37. Cleaning rod.
38. Cleaning rod stop.
39. Stock.
40. Hand guard.
75. Muzzle cover (for rifle).
81. Front sight protector.

Screws and pins.

41. Trigger guard screw (rear).
42. Trigger guard screw (front).
42a. Check screw of front trigger guard screw.
42b. Check screw of rear trigger guard screw.
43. Bolt stop screw.
44. Rear sight bed screw.
45. Hand guard spring screw (2 p.).
46. Cross piece.
47. Cross piece nut.
48. Front sight ring screw.
49. Butt plate screw. (2 p.).
Bottom swivel base screw. 2 p.).
50. Bottom swivel base pin.
51. Bayonet attachment.
52. Magazine cover plate catch pin.
53. Trigger bar pin.
54. Trigger pin.
55. Lower band swivel pin.
55a. Sight tangent pin.

Springs.

56. Safety catch spring.
57. Firing pin spring.
58. Magazine cover plate catch spring.
59. Trigger bar spring.
60. Sight slide spring (2 p.).

Bayonet.

61. Blade.
62. Grip.
63. Guard.
64. Pawl.
65. Plates, right and left.
66. Scabbard, assembled.
66a. Scabbard spring.
66b. Scabbard spring screw.
66c. Hook.
66d. Scabbard, bare.
66e. Scabbard cap.
66f. Scabbard flange.
67. Pawl nut.
68. Plate screws (2 p.).
69. Countersunk screw plate. (2 p.).
69a. Tapped screw plate (2 p.).
70. Grip pin (2 p.).
71. Guard pin (2 p.).
72. Pawl spring.

General data

Calibre :	7 m/m.	7.65 m/m	7.9 m/m
Length of rifle without bayonet	1.099 m.	1.099 m.	1.099 m.
Length of rifle with bayonet .	1.479 m.	1.479 m.	1.479 m.
Weight of rifle without bayonet (appr.)	3.875 kgs.	3.875 kgs.	3.875 kgs.
Weight of rifle with bayonet .	4.350 kgs	4.350 kgs	4.350 kgs
Length of barrel (X)	589 m/m	589 m m	589 m/m
Length of line of sight . . .	504 m 'm	504 m 'm	504 m/m
Number of grooves	4	4	4
Direction of twist	to the right	to the right	to the right
Number of cartridges in the magazine	5	5	5
Lowest rearsight graduation in m.	200	200	200
Highest rearsight graduation in m.	2000	2000	2000
Intermediate ranges in steps of 100 m.	—	—	—
Weight of bayonet with scabbard	720 grs.	720 grs.	720 grs.
Weight of bayonet without scabbard	475 grs.	475 grs.	475 grs.
Length of bayonet	516 m/m	516 m/m	516 m/m

(×) The Mauser rifle can be supplied with a barrel of 740 m/m, the total longth of the rifle being in this case 1,250 m. The ballistics of the rifle are not mentioned in this manual.

F. N. Repeating Carbine

(Mauser System)

The construction of the F. N. carbine (Mauser system) is based on the same principle as the F. N. rifle, buts its length is reduced in order to meet the requirements of light troops, machine gun- and artillery men, as well of those of special bodies of constabulary, frontier guards etc.

These troops which are to move quickly over ground of every nature, would be hindered in their movements by an arm of too great length.

The carbine is distinguished from the rifle by the following characteristics:

The barrel has a length of 440 mm.

The sight tangent serves as a recess for a flat spring which tends to press it down on the bed of the sight.

The sight tangent is graduated on one face from 200 to 1.400 m. When completely pressed down, it gives the range of 200 m.

The bolt lever is of the curved pattern to reduce the bulk of the arm. The carbine can be supplied for use of a bayonet or not. It will be provided, according to requirements with a bayonet attachment with a stopping groove or without.

On request, the carbine can also be delivered with a lower band and bottom swivel fitted on the side so as to allow the carbine being slung over the shoulder.

The rifle and the carbine can further be equipped with a front sight protector and with a muzzle cover.

Right side view of F. N. Carbine (Mauser System).

Left side view of F. N. Carbine (Mauser System).

Ballistics of the F. N. Rifle. Cal. 7 m/m

Bullet S. 9 gr.

Distance	Angle of elevation	Angle of descent	Time of flight sec.	Height of trajectory m.	Remaining velocity m/s	Remaining energy kgm.	Danger zone h=1m,70	Rectangle of dispersion Zone containing 50 % of shots Height cm.	Breadth cm
0	—	—	—	—	852,9	333,7	—	—	—
200	5′ 11″	5′ 52″	0,26	0,08	720,8	238,3	total	7	6
400	11′ 45″	14′ 54″	0,56	0,38	601,4	165,9	total	14	12
600	20′ 16″	28′ 59″	0,93	1,05	497,9	113,7	total	25	20
800	31′ 23″	50′ 54″	1,37	2,31	413,4	78,4	151	45	35
1000	45′ 58″	1° 23′ 22″	1,89	4,49	350,4	56,3	76	65	45
1200	1° 4′ 55″	2° 7′ 28″	2,51	8,02	308,8	43,7	44	—	—
1400	1° 33′ 53″	3° 15′ 10″	3,29	14,30	274,2	34,5	28	—	—
1600	2° 11′ 50″	4° 40′ 20″	4,17	23,76	246,3	27,8	20	—	—
1800	2° 49′ 31″	6° 5′ 2″	5,02	34,73	228,6	24,0	14	—	—
2000	3° 41′ 32″	8° 5′ 27″	6,06	51,14	207,1	19,7	10	—	—

Muzzle velocity ..... 855 m/s.
V. 25 ..... 835 m/s.
Pressure ..... 3200 kg/cm2.
Maximum range ..... 3.700 mètres.

Ammunition characteristics

	Cal. 7 m/m			Cal 7,65 m/m		Cal. 7,9 m/m	
	Round nose bullet	Streamlined pointed bullet w tapered base	Light pointed bullet	Streamlined pointed bullet w tapered base	Light pointed bullet	Streamlined pointed bullet w tapered base	Light pointed bullet
Numerical Data							
Length of cartridge (maximum)	78 mm.	78 mm.	78 mm.	75.4 mm	75,4 mm.	80,4 mm.	80,4 mm.
Weight of cartridge	24 gr.	23,8 gr.	23 gr.	25,35 gr.	23,1 gr.	26.2 gr.	23,5 gr.
Average weight of bullet	11,2 gr.	10,5 gr.	9 gr.	11,25 gr.	10 gr.	12,8 gr.	10 gr.
Average length of bullet	31,0 mm.	35 mm.	30,0 mm.	33,1 mm.	27,0 gr.	35,0 mm.	28,0 mm.
Diameter of bullet (maximum)	7,26 mm.	7,26 mm.	7,26 mm.	7,98 mm	7,97 mm.	8,23 mm.	8,23 mm.
Sectional density	29,1 gr/cm2	28 gr/cm2	23,4 gr/cm2	22,6 gr/cm2	21,8 gr/cm2	26,2 gr/cm2	20,4 gr/cm2
Composition of jacket	steel plated	brass	steel plated	brass	steel plated	steel plated	steel plated
Weight of clip for 5 cartridges	8,6 gr.	8,6 gr.	8,6 gr.	7 gr.	7 gr.	6,5 gr.	6,5 gr.
Approximate weight of powder charge	2,50 gr.	2,70 gr.	2,90 gr.	2,55 gr.	2,90 gr.	2,90 gr.	3,20 gr.
Ballistics							
1. — RIFLE							
Muzzle velocity	670 m s.	750 m s.	850 m s.	725 m/s.	830 m/s.	760 m/s.	855 m/s.
Velocity 25 m. from muzzle	650 m s	730 m/s.	835 m/s.	710 m/s.	805 m/s.	740 m/s.	835 m/s.
Pressure	3000 kg cm2	3200 kg/cm2	3200 kg/cm2	3000 kg/cm2	3000 kg/cm2	3200 kg/cm2	3000 kg/cm2
Muzzle energy	256 kgm.	310 kgm	334 kgm.	300 kgm.	351 kgm.	377 kgm.	368 kgm.
Maximum range	3250 m.	5000 m.	3700 m.	5000 m.	3700 m.	4700 m.	3700 m.
2. — CARBINE							
Muzzle velocity	640 m/s	710 m/s	810 m/s.	700 m/s.	800 m/s.	730 m/s.	800 m/s.
Velocity 25 m. from muzzle	620 m/s	690 m s	790 m s.	680 m s.	780 m/s.	710 m/s.	780 m/s.
Muzzle energy	234 kgm.	293 kgm.	301 kgm.	290 kgm.	326 kgm.	348 kgm	326 kgm.